

CLAIMS

1. A method for calibrating robotic picker mechanisms in automated storage library systems, comprising:
 - detecting a calibration mark associated with a storage library with at least one sensor, wherein the at least one sensor detects the calibration mark from a first position and a second position, the first position and the second position separated by an offset distance;
 - determining a relative shift in the detected calibration mark detected from the first position and the second position; and
 - determining a distance between the calibration mark and a reference position based on the shift in the detected calibration mark, the offset position, and a focal length associated with the at least one sensor used to detect the calibration mark.
2. The method of claim 1, wherein the reference position is associated with an average position of the first position and the second position.
3. The method of claim 1, wherein the reference position is associated with at least one of the first position and the second position.
4. The method of claim 1, wherein the reference position is associated with a robotic picker mechanism.
5. The method of claim 1, wherein the at least one sensor includes a first sensor and a second sensor.
6. The method of claim 1, wherein the at least one sensor includes a first sensor and a second sensor separated by the offset distance.

7. The method of claim 1, wherein the at least one sensor is associated with a robotic picker mechanism.
8. The method of claim 1, wherein the at least one sensor is attached to a robotic picker mechanism.
9. The method of claim 1, wherein the at least one sensor includes an optical sensor.
10. The method of claim 1, wherein the sensor includes a CMOS imaging device.
11. The method of claim 1, wherein the first position and the second position are in a plane substantially orthogonal to a direction between the at least one sensor and the calibration mark.
12. A robotic mechanism for transporting storage devices in a storage library, comprising:
 - a gripper assembly for handling storage devices;
 - a sensor associated with the gripper assembly; and
 - at least one controller, wherein the at least one controller and sensor are adapted to
 - detect a calibration mark from a first position,
 - detect the calibration mark from a second position,
 - determine a shift in the detected calibration mark from the first position and the second position relative to the sensor, and

determine a distance between a reference point and the calibration mark based on the shift in the calibration mark, the distance between the first position and the second position, and a focal length associated with the sensor.

13. The device of claim 12, wherein the reference position is associated with an average position of the first position and the second position.
14. The device of claim 12, wherein the reference position is associated with at least one of the first position and the second position.
15. The device of claim 12, wherein the reference position is associated with the gripper assembly.
16. The device of claim 12, wherein the calibration mark is associated with at least one of a storage bin and a drive bezel.
17. The device of claim 12, further including a light source associated with the gripper assembly for directing light to the approximate position of the calibration mark.
18. The device of claim 12, wherein the sensor is coupled to a robotic picker mechanism.
19. The device of claim 12, wherein the sensor includes an area sensor device.
20. The device of claim 12, wherein the sensor includes a CMOS imaging device.

21. The device of claim 12, wherein the sensor includes a CCD imaging device.
22. The device of claim 12, wherein the calibration mark includes at least one of a rectangular shaped and cross-hair indicium.
23. A storage library system, comprising:
a housing adapted to include storage slots and one or more media drives;
and
a gripper assembly for handling storage devices in a storage library system, having:
a sensor associated with the gripper assembly; and
a controller, wherein the controller and the sensor are configured to:
detect a calibration mark from a first position,
detect a calibration mark from a second position,
determine a shift in the detected calibration mark from the first position and the second position relative to the sensor, and
determine a distance between the gripper assembly and the calibration mark based on the shift in the calibration mark, the distance between the first position and the second position, and a focal length associated with the sensor.
24. The system of claim 23, wherein the calibration mark is associated with at least one of a storage bin and a drive bezel.

25. The system of claim 23, further including a light source associated with the gripper assembly for directing light to the approximate position of the calibration mark.
26. The system of claim 23, wherein the sensor includes an area sensor device.
27. The system of claim 23, wherein the sensor includes a CMOS imaging device.
28. The system of claim 23, wherein the sensor includes a CCD imaging device.
29. The system of claim 23, wherein the calibration mark includes an optically detectable indicium.